VAid823lt EPON OLT User Manual

Hardware Configuration Manual

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5. Setup and Configuration
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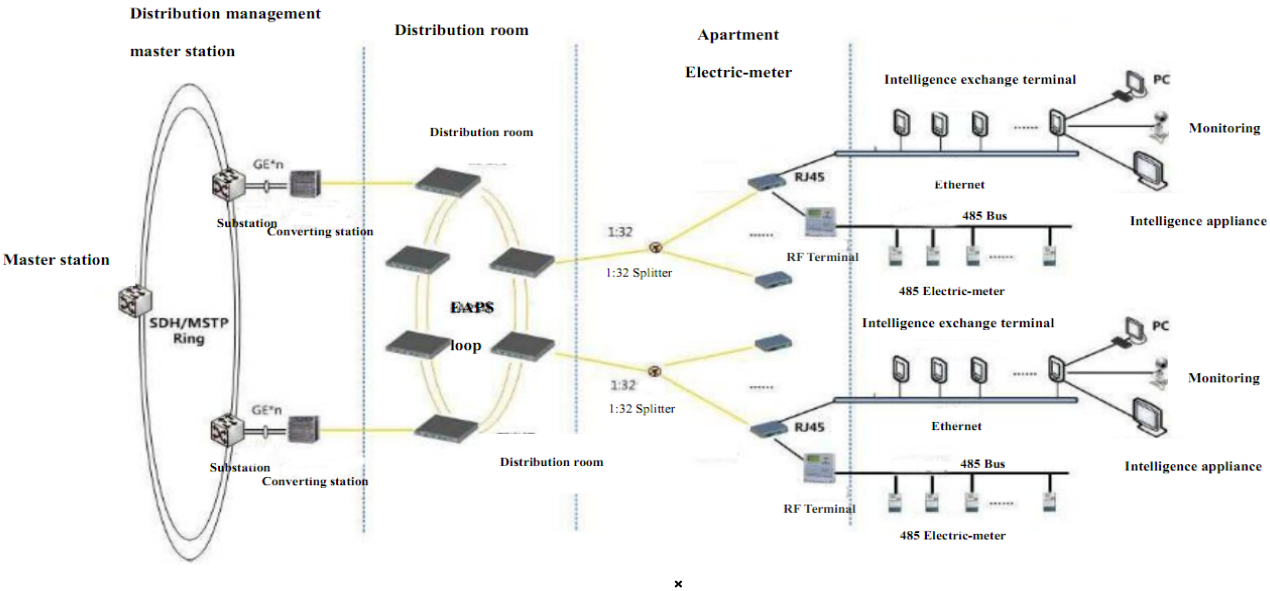
Chapter1 Product Introduction

1.1 VAid823lt EPON OLT Introduction

VAid811lt has two, three-speed forwarding capability, used primaril y for industrial electricity networks in the field of digital management, works for the National Grid distribution automation and electricity infor mation collection "to provide comprehensive, intelligent, strong, advanc ed, professional solution. Splitting ratio of up to 1:64, mixed networkin g support different types of ONU, operators' investments do minimized.

1.2 VAid823lt EPON OLT Typical Application

The VAid823lt typical networking is as shown below:



Chapter 2 Specifications and features

2.1 VAid823lt EPON OLT appearance

Picture 2-1VAid823lt EPON OLT appearance

2.2 VAid823lt EPON OLT Front Panel

2.2.1 Front Panel

VAid823lt EPON OLT front panel are arranged as shown in the following diagram, the front panel contains 8 Gigabit Combo ports and 8 PON port, a number of LED in dicators, a console port and an AUX port:

Picture 2-2 VAid823lt EPON OLT front panel

The front panel LED indicator label are described in Table 2-1:

Table 2-1 EPON OLT master card front panel indicator

Indicator	Panel Indicator	Status	Meaning
System status lights	SYS	Flash	System operates normal
		Always on or Always off	System operates abnormal
	PWR1	Always on	System power supply is normal.
		Always off	System power failure
	PWR2	Always on	System power supply is normal.
		Always off	System power failure

	PWR	on	System power supply is normal.
		off	System power failure
	AUX	on	Debug mode is turned on
		off	Debug mode is turned off
Port LEDs	GE	on	Connection is normal.
		Flash	Send or receive data
		off	Port is not connected
PON indicator	REG	on	ONU registration on the PON port
		off	The PON port no ONU registration on
	ACT	on	The port ongoing data transceiver
		off	The port is not performing data transceiver

2.2.2 EPON OLT SFP Port Feature

The VAid823lt OLT front panel 8 PON OLT SFP ports and eight Gigabit Combo ports.

Table 2-2 EPON OLT SFP selected module description

SFP module name	Center wavelength	Connector types of fiber interface	Fiber interface specification	Maximum transmission distance of optical fiber
SFP-EPON-LH10	Receive 1310nm, send 1550nm	LC	Single-mode fiber	10km
SFP-EPON-LH20	Receive 1310nm, send 1550nm		Single-mode fiber	20km

Table 2-6 GE SFP interface selected module description

SFP module name	Center wavelength	Connector types of fiber interface	Fiber interface specification	Maximum transmission distance of optical fiber
SFP-GE-SX-MM850	850nm	LC	Multimode fiber	550m
SFP-GE-SM1310-LH10	1310nm		Single-mode fiber	10km
SFP-GE-SM1310-LH20				20km
SFP-GE-SM1310-LH40				40km
SFP-GE-SM1550-LH40	1550nm			40km
SFP-GE-SM1550-LH60				60km

Caution: The module types of GE SFP updates when the time changes, so if you need the accurate module type information, please require the marketing of New .

2.3 VAid823lt EPON OLT Back Panel

2.3.1 Back Panel

The VAid823lt EPON OLT rear panel as shown below, comes standard with an AC 220V power supply interface. Supported by the device according to the user needs to modify the power supply module, configurable dual AC or dual DC power supply can also be modified for single DC power supply.

Picture 2-3 EPON OLT back panel

1——2*power input options；

2——ground column；

⚠ Caution: EPON OLT supports AC and DC, DC+AC or single DC or single AC.

2.3.2 Optional power

The VAid823lt EPON OLT Optional support dual AC power input, dual DC power input, AC + DC power input.

2.4 VAid823lt EPON OLT System Features

Table 2-4 EPON OLT system features

Items	VAid823lt
Size（W×H×D）	1RU Cassette,442mm(L)×315mm(W)×44mm(H)
Weigh	<3kg
Input voltage	AC:90V～240V 47/63Hz

	DC:-36V ～ -72V
Max power consumption	< 32W
Port	8 GE Combo ports 8 PON port
Switching mode	Store-and-forward （Store and forward）
Switching capacity	32Gbps
Standard	IEEE 802.3ah EPON IEEE802.3(10Base-T) IEEE802.3u(100Base-TX) IEEE802.3z（1000BASE-X） IEEE802.3ab（1000Base-T） IEEE802.1Q(VLAN) IEEEE802.1d(STP) IEEEE802.1W(RSTP) IEEEE802.1S(MSTP) IEEE802.1p(COS) IEEE802.1x(Port Control) IEEE802.3x（flow- control） IEEE802.3ad(LACP) Each OLT interface hangs up to 64*ONU Each OLT transmission distance is up to 20Km
Layer 2 feature	VLAN,QinQ,Link aggregation,broadcast storm control Support up to 4096*VLAN； Support 16K MAC address table; Supports bandwidth control
Aggregation group	127 groups of up to eight members
ACL/QOS	To support entrance, egress ACL Back pressure flow control (half duplex)

	IEEE 802.3x flow control (full-duplex) IEEE 802.1p, CoS WRR, SP, and FIFO queue scheduling algorithm To support 802.1P/DSCP priority Mark / Remark Limit function based on the uplink and downlink of each ONU Support the function of the DBA and SLA stream classification Support for priority-based flow mark, packet redirection
Security Feature	Limit the maximum number of users per port Port Isolation Packet storm control ACL access control functions based on the data stream PON port to transfer data encryption Support 802.1X authentication
Multicast	IGMP v1/v2/v3 IGMP Snooping Multicast VLAN, managed multicast
Port Mirroring	Support
Configuration and Management	Support SNMP management support for network management system; CLI, Web, SNMP, TELNET, cluster and other management methods. RMON V1, group 1,2,3,9 SSHv1/v2 Through TFTP and FTP software upgrades and bootrom upgrade Local or server log recording system syslog In English the command prompt Ping, traceroute and other network testing tool

	Debug output debug
Lightning protection	Service port with lightning protection ability
Maintain	Support Telnet remote maintenance
Working temperature	0℃～45℃
Working humidity	10%～90%

Chapter 3 Installation Preparation

3.1 Security Notice

To avoid device damaging and bodily injured caused by unsuitable operation, please follow these notices:

- Before cleaning switch, pull out the plug of switch. Do not wipe it with wet cloth and liquid.
- Do not locate switch near water or humid place, and prevent water and humidity entering switch.
- Do not locate switch on unstable case or desk. Falling may cause severe damage to switch.
- Keep the ventilation of the room and the switch.
- Switch can work normally under correct power pressure. Please affirm the power pressure of switch is the same as that marked.
- To avoid the danger of electricity attacking, do not open the cabinet shell though the switch is power off.

3.2 Examine Installation Location

VAid823It EPON OLT must use indoor, no matter install in the cabinet or put the platform directly, it should ensure below conditions :

- Make sure there is space between the wind inlet and vents to hot dissipation.
- Make sure the cabinet or platform has the good vents dissipation system.
- Make sure the cabinet or platform is firmed to bear the device weight.
- Make sure the cabinet or platform is connected to the ground.

To ensure the device works normally and prolong the service life, the installation environment also need to fulfill the below requirements.

3.2.1 Temperature/Humidity

To guarantee normal working and life span of the switch, certain temperature and humidity can be maintained in the equipment room. If the humidity is too high, the insulating of insulating material may be not good, even creepage and sometimes may cause the change of mechanical performance and rustiness of metal parts. If the related humidity is low, the insulated gasket will be shrinkable which will cause the looseness of captive screw. In the dry climate, electrostatics may be caused which is harmful for the CMOS circuit of switch. The higher the temperature is, the more dangerous it is. It will greatly reduce the reliability of the switch, and long-term high temperature will affect the life span of the switch. Over-high temperature may accelerate the aging of the insulated materials.

3.2.2 Neatness

Dust is harmful for the operation of the switch. The dust in the room fell on the equipment may cause the absorption of the electrostatics, which may influence the life span of the switch and cause the communication failure. The requirement for the dust and the grin size is as following.

Table 3-1 The requirement for the dust in switching room

The maximum diameter (um)	0.5	1	3	5
The maximum thickness (the	1.4×10^{7}	7×10^{5}	2.4×10^{5}	1.3×10^{5}

number of grain per m^3)				

Besides dust, switching room also strictly requires the content of salt, acid and sulfide. This harmful gas may accelerate the rusting and aging of same parts. Such harmful gas must be prevented as SO2, H2O, NO2, NH3 and CL2. The restricted value is as following:

Table 3-2 The limitation of harmful gas

Gas	Average (mg/m^3)	Maximum (mg/m^3)
SO_2	0.2	1.5
H_2S	0	0.03
NO_2	0.04	0.15
NH_3	0.05	0.15
Cl_2	0	0.3

3.2.3 Immunity requirements

In the use of equipment may be derived from the system external interference, such interference by capacitive, inductive coupling, electromagnetic radiation, public impedance (including the grounding system) coupling and wires (power line, the signal lines and the output lines) conduction mode on the equipment influence. Therefore we should pay attention to:

AC power supply system for TN system, AC power source socket should be equipped with protective earth (PE) of single phase three wire power supply socket, so that the device can effectively filter the filter circuit interference of electric network.

Equipment location away from the high power radio transmitter, radar transmitter, high frequency large current device.

Necessary to take the electromagnetic shielding method, such as interface cable with shielded cables.

3.3 Tools for Installation

Tools needed:

- Cross screwdriver
- Antistatic wrist strap
- Wire stripper

Cable needed:

- Power cable
- Console cable
- RJ-45 connector reticle

Device needed:

- Configuration terminal (can be PC)

Caution EPON OLT doesn’t provide installation tools which are prepared by user ..

Chapter 4 Installation

⚠ Caution: There is an anti-dismantle seal remarked New on the installation screw outside the case. When the agents maintain the device, it is required that seal is entire. So before user opens the device, please get the permit from local agent, or user will take the responsibility with unauthorized operation maintenance.

4.1 Installation Step

4.1.1 Install to the Rack

VAid823lt EPON OLT can install on the rack, the process is as below:

Step 1: Examine grounding and stability of the cabinet. Use screw to fasten hanger to the two sides of the front board and back board of the switch；

Step 2: Locate switch on the salver of the cabinet. Move it to the suitable location along with the slide of the switch. Keep some space between switch and the slide.

Step 3: Fasten hanger to the fixed slide of the cabinet to guarantee the bracket of eac h slot and hanger of the switch are fastened to the cabinet.

Figure 4-1 EPON OLT installation

Caution: The fixed angle iron is only for fixation not for load-bearing. The device install on the cabinet, slide (fix on the cabinet)under the device is to bear the weight.

4.1.2 Install to the Platform

At more situations, users always put the device to the clear platform. The operation is simple, please be noted of below steps:

- Make sure the platform is stable and good connected to the ground
- Leave 10cm space for the heat dissipation around the device
- Don't put the heavy things to the device.

4.2 Connect to Ground

VAid823It EPON OLT adopts hot swappable power box. It also supports AC and D C power backup for each other mixed-mode.

There are two kinds of power box, AC and DC, the range of power is

AC 100V～ 240V

DC –36V~–72V

4.2.1 AC power Installation

1. The input range of AC

100V～240V,50/60Hz AC

2. Connect to the AC power cord

The device randomly with the power line is inserted into the enclosure on the rea r panel of the power socket, another end is inserted to provide AC power outlet.

4.2.2 DC power Installation

1. The input range of DC

-36V～-72V, DC

2. Connect to the DC power cord

Plug the DC power cord into outlet on the rear panel, the other end red wire inserts into the DC power positive electrode, black wire inse rts to the DC power negative electrode.

4.2.3 Connect to Ground

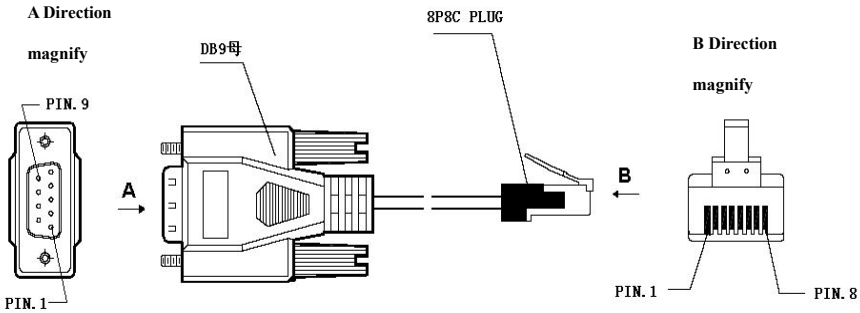
⚠ Caution: The device well-connected can protect switch from lightning and jamming, user must correctly connect the ground carefully.

VAid823It EPON OLT power supply input end connected with noise filter, which is directly connected with the chassis protection, so it must be well grounded, so that the induction electric, electric leakage can be safely into earth, and improving the electromagnetic interference resistance ability. The device attached to the chassis ground end randomly received equipment panel after grounding pole, the other end of the nearest good grounding. Requirements for grounding resistance less than 4 ohm. If the device is mounted on the standard 19 " cabinet, it also requires 19 inch standard cabinet earthing.

4.3 Connect to Switch Console Port

4.3.1 Console Cable

Console cable is a shield cable of 8 cores. One end is crimped RJ-45 connector, whi ch is inserted to Console interface; the other end is a connector with DB-9 (holes). T he Console cable is as the following picture:



Picture 4-2 Console cable

Table 4-1 Console cable connection

RJ45	Signal	Direction	DB-9
1	CTS	→	8
2	DSR	→	6
3	RXD	→	2
4	GND	-	5
5	GND	-	5
6	TXD	←	3
7	DTR	←	4
8	RTS	←	7

4.3.2 Connect to Console Port

After configuring the device, the steps of cable connection as below:

Step 1: Put DB-9 to the configured host or console ;

Step 2: Connect RJ-45 to console

Caution: Please recognize the interface identification to avoid inserting the other interfaces by mistake.

4.4 Check after the Installation

- Check the selected power is the same as identification power or not.
- Check the ground wire is connected or not
- Check the console , power input cable are connected or not.

Chapter 5 Booting and Configuration

Caution: EPON OLT can provide two ways of configuration for users:

First: Local terminal configuration. Terminal (can be PC) connects to the Console by serial interface;

Second: Terminal Telnet configuration. Configuration terminal connects to device by IP network. Pay attention to configure IP address, net mask before using Telnet terminal.

5.1 Local terminal configuration

5.1.1 Configuration environment

Use configuration interface cable connect Console interface to terminal (such as P C).

5.1.2 Connect configuration cable

Step 1: Connect DB-9 connector to PC or serial interface of terminal.

Step 2: Connect RJ-45 to Console of the switch.

5.1.3 Configure terminal parameter

Step 1: Boot PC and run terminal emulation program (such as hyperterminal in Win dows).

Step 2: Configure terminal parameter (take the configuration of parameter ofhyperter minal in Windows 2000 as an example). Parameters are: baud rate is “9600”, data bit is “8”, and parity check is “none”, stop bit is “1”, flow control is “none”, and cho ose terminal emulation as “auto-detect”. The configuration is as following:

Click “start”-“program”-“accessory”-“communication”-“hyperterminal” to set up new con nection. System will display interface as following. Input the name of the new conne ction in “name”, such as EPON.

Picture 5-1 Explanation of hyperterminal connecting interface

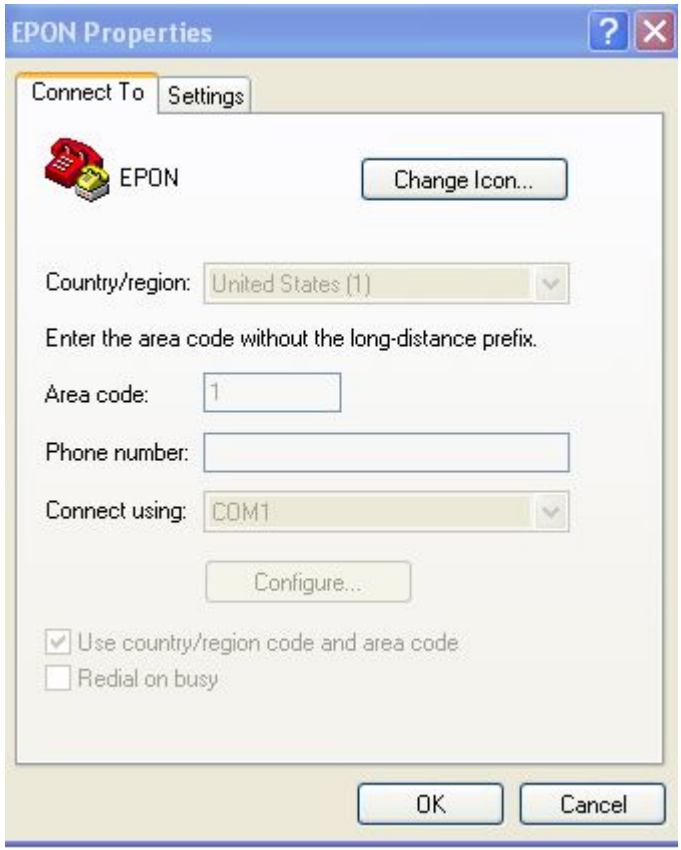
Click [yes] to the interface [connecting to] as following. Choose serial interface used by connect ion in “use in connection”.

Picture 5-2 Configuration of using serial interface in hyperterminal

After choosing serial interface, click [yes] to display corresponded serial attribution interface as following. Configure baud rate to be “9600”, data bit to be “8”, parity check is “none”, stop bit is “1”, flow control is “none”.

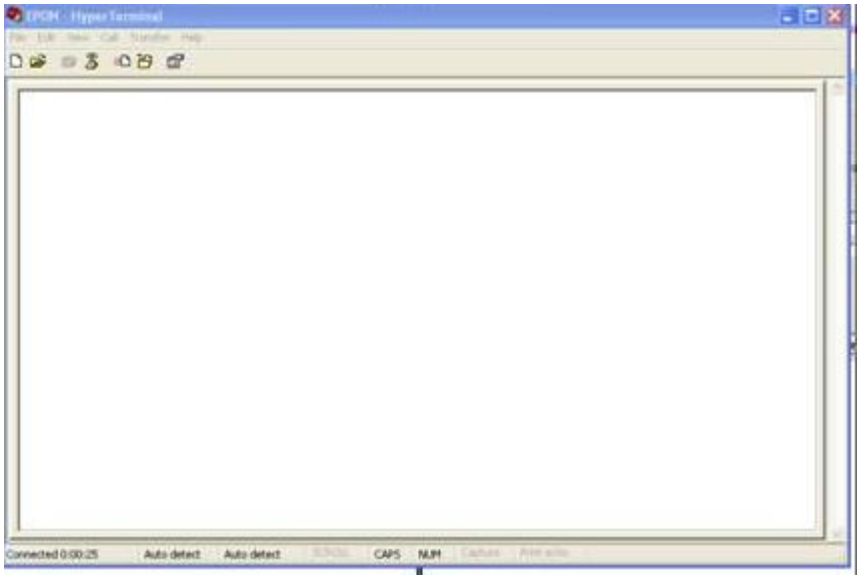
Picture 5-3 Serial parameter configuration

Click [configure] in hyperterminal attribution to configure serial interface attribute as following:



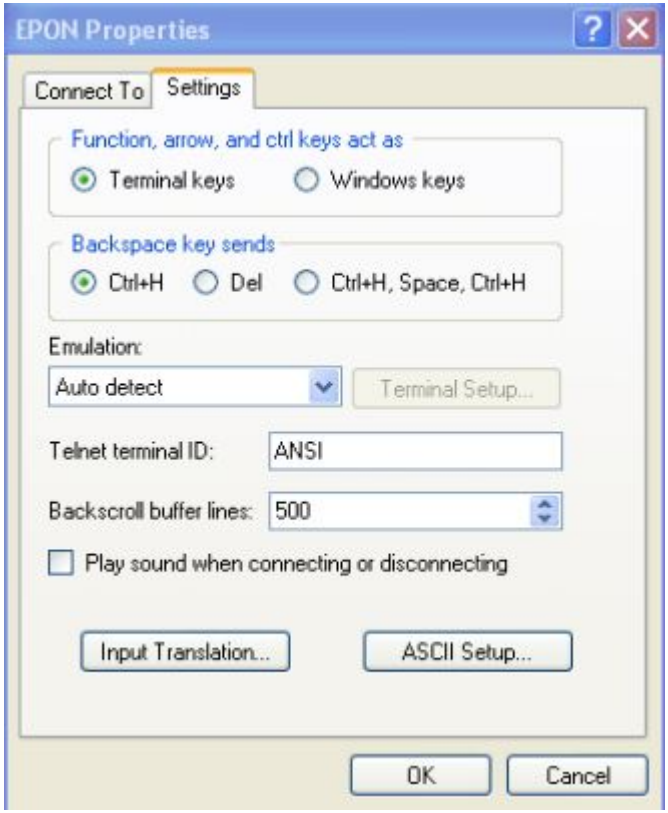
Picture 5-4 configure serial interface attribute in hyperterminal attribution interface

After configuring serial parameter, click [yes] to enter hyperterminal interface as following:



Picture 5-5 hyperterminal window

Choose （attribution） in typerterminal window to enter attribution window. Click [configure] to enter attribution configuration window (as in following picture). Choose terminal emulation as “auto -detect”, then click [yes].



Picture 5-6 Configuration of terminal emulation in attribution configuration

5.2 Booting

5.2.1 Examine before the power on

Examine as following before the power of VAid823ltEPON OLT is on:

- The correct connection of power wire
- The consistency of the power supply and the power that switch needed
- The correct connection of configuration cable. The terminal or PC for configuration has been configured.

5.2.2 Booting

After the power is on, followings will be displayed:

Username(1-32 chars):

Input username and press enter button. The prompt of inputting password is as foll owing:

Password(1-16 chars):

After inputting password, followings are displayed:

Optiway>

At this time, user can check and configure system information of device.

Chapter 6 Software Upgrade

General software upgrading uses serial interface which is very slow, cost long time and inconvenient. VAid823lt EPON OLT introduces xmodem, tftp and ftp to realize the convenience of software upgrading and file downloading. EPON OLT can upgrade application program on line, load configuration file by xmodem, tftp and ftp, and also upload configuration files by xmodem, tftp and ftp.

1. Upload configuration file through TFTP（refer to software configuration manual）
2. Download configuration file through TFTP（refer to software configuration manual）
3. Download application file through TFTP（refer to software configuration manual）

Download application file through TFTP. The command is:

load application tftp *tftp-server filename*

Download application file through TFTP:

Step 1: Enable TFTP server and configure download destination path；

Step 2: Imput TFTP download command.

Example: Download application program app.arj from IP address 192.168.0.100. Enable TFTP server and configure download destination path. Configure it in privileged mode:

Optiway#load application tftp 192.168.0.100 app.arj

There will be displaying as following if succeed:

Application file has been downloaded via tftp successfully.

The new application will not be effective until the device is rebooted.

Caution:The new application will not be effective until the device is rebooted.

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Chapter 7 Troubleshooting

7.1 Power System Failure

VAid823lt EPON OLT can check the power system failure according to the power indicator on the front board: when the power system works normally, the power indicator keeps on; if it is off, please examine as following:

- The correct connection of power wire.
- The matching of power supply of switch and power required.

If the power switch open

7.2 Configuration System Failure

After The power of VAid823lt EPON OLT is on, if the system works normally, the booting information will be displayed in configuration terminal; if there is failure in configuration system, it will display nothing or illegible characters.

7.2.1 Troubleshooting on No Displaying

After the power is on and if the configuration terminal displays nothing, please examine the device as following:

- The power works normally.
- The correct connection of Console cable

If there is no problem in above examination, maybe there is something wrong with the parameter configuration of the terminal (such as hyper terminal) or the configuration cable.

7.2.2 Troubleshooting on displaying Illegible Characters

If illegible characters are displayed, parameter configuration of terminal (such as hyper terminal) is incorrect. Please affirm parameter configuration of terminal (such as hyper terminal): baud rate is “9600”, data bit is “8”, and parity check is “none”, stop bit is “1”, flow control is “none”, and choose terminal emulation as “auto-detect”.

Chapter 8 Appendix RJ-45 Connector

8.1 RJ-45 Connector

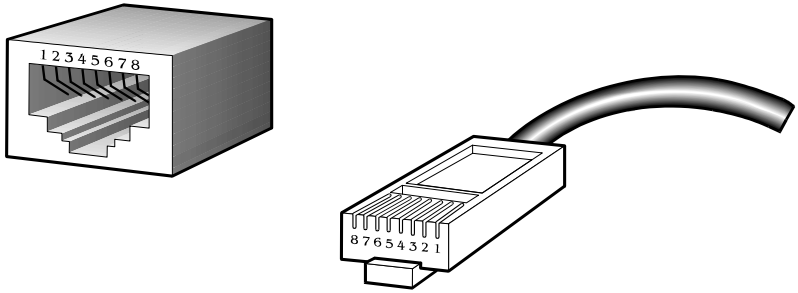
1000Base-TX interface and debug network interface of VAid823lt EPON OLT uses RJ-45 connector.

Picture 9-1 describes the plug of standard RJ-45, connector and function of each pin of RJ-45 in each mode

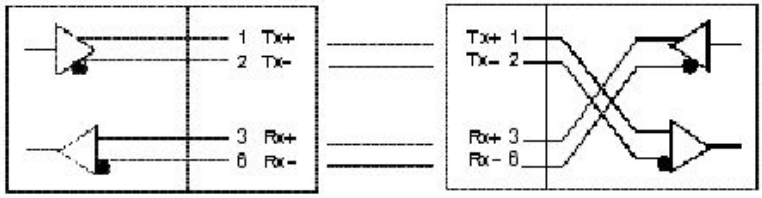
Picture 9-2, 9-3 describe the connecting of parallel reticle and crossing reticle.

Table 9-1 describes the function of each pin of RJ-45 in MDI mode;

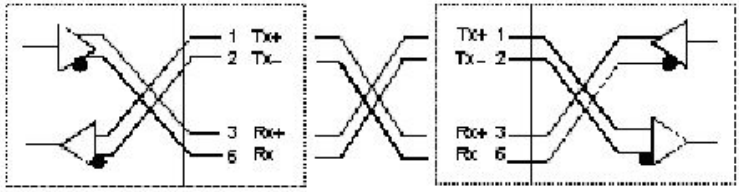
Table 9-2 describes the function of each pin of RJ-45 in MDI mode.



Picture 8-1 Standard RJ-45 plug and connector



Picture 8-2 Parallel reticle



Picture 8-3 Crossing reticle

Table 8-1 Pin distribution of RJ-45 MDI interface

Pin number	10/100Base-T		1000Base-T	
	Signal	Function	Signal	Function
1	Tx+	Sending data	BIDA+	A to the data
2	Tx-	Sending data	BIDA-	A to the data
3	Rx+	Receiving data	BIDB+	B to the data
4	Reserved	-	BIDB-	B to the data
5	Reserved	-	BIDC+	C to the data
6	Rx-	Receiving data	BIDC-	C to the data
7	Reserved	-	BIDD+	D to the data
8	Reserved	-	BIDD-	D to the data

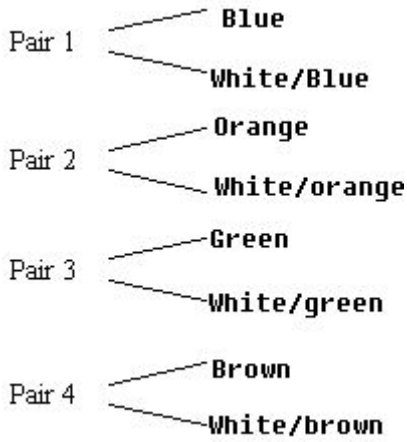
Table 8-2 Pin distribution of RJ-45 MDIX interface

Pin number	10/100Base-T		1000Base-T	
	Signal	Function	Signal	Function
1	Rx+	Receiving data	BIDB+	B to the data
2	Rx-	Receiving data	BIDB-	B to the data
3	Tx+	Sending data	BIDA+	A to the data
4	Reserved	-	BIDC+	C to the data
5	Reserved	-	BIDC-	C to the data
6	Tx-	Sending data	BIDA-	A to the data
7	Reserved	-	BIDD+	D to the data

8	Reserved	-	BIDD-	D to the data

8.2 Make the Cable

Appendix picture 2 is the example of making Ethernet cable of RJ-45 connector by usi ng categories 5 twisted-pair.



Picture 8-4 The picture of categories 5 twisted-pair

Categories 5 twisted-pair consists of 8-core filament with the color on the insulated laye r being grouping sign. Usually, it uses a single color and single color with white to be a pair of standard, and sometimes uses color points to be a pair of sign. Here, take th e former as an example.

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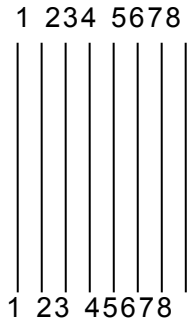
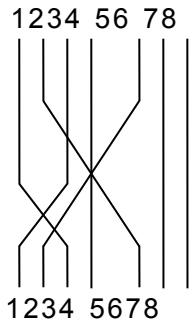


SIDE 1	SIDE 2
1＝white/orange	1=white/orange
2＝orange	2＝orange
3＝white/green	3＝white/green
4＝blue	4＝blue
5＝white/blue	5＝white/blue
6＝green	6＝green
7＝white/brown	7＝white/brown
8＝ brown	8=brown

Picture 8-5 Make parallel reticle



SIDE1	SIDE2
1＝white/orange	1＝white/green
2＝orange	2＝green
3＝white/green	3＝white/orange
4＝blue	4＝blue
5＝white/blue	5＝white/blue
6＝green	6＝orange
7＝white/brown	7＝white/brown
8＝ brown	8=brown

Picture 8-5 Make crossing reticle